

ABSTRACT

A high quality digital 3D sound rendering is implemented using high resolution interaural time delays formed from two delay lines: a first delay line providing a rough estimate of the desired interaural time

5 delay for a particular audio sample, and a second delay line in series with the first delay line providing a more finely resolved fractional delay. In the disclosed embodiment, the first delay module, i.e., the integer delay module, is formed from a first-in, first-out (FIFO) buffer with appropriate selection control of a desired sample as it passes through the FIFO buffer

10 with each clock cycle based on the sampling rate. The second delay module (i.e., the fractional delay module) is formed from a plurality of polyphase (FIR) filters. The number of polyphase filters is determined based on the desired resolution of the interaural time delay.